

Renesas Microcomputer

# H8SX Family Selection Guide

### H8SX/1700 Series

Application	Device			Memory				CPU			DMA			External bus extension		Clock		Power Supply Voltage Detection		ADC	DAC	Timers		Watchdog Timer	Serial Interface		I <sup>2</sup> C-bus	Smart Card/SIM	SSU/Special Serial I/O	CAN Channels	USB Function	IrDA	I/O Ports			External Interrupt Pins	On-Board Debugging Function		Operating Frequency/Supply Voltage	Operating Ambient Temperature (°C)	Package	
	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Program Security	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	Multiplier	DMAC (channels)	EXDMAC	DTC/DMACII	Address Space (Bytes)	Bus State Controller	PLL	Subclock	POR (Power-On Reset)	LVD (Low Voltage Detection)	Resolution x Channels	Resolution x Channels	8-bit		16-bit	Clock Sync./Clock Async.							Clock Sync. Only	Input Only (Numbers)	CMOS I/O (Numbers)		N-Channel Open Drain Port (Numbers)	17(NMI + 16(8 level))				On-Chip Debug
Airbag	H8SX/1700	H8SX/1720	R5F61725J64FPV	256K	24K	F	Yes	H8SX core	87	15.6 (@64MHz)	32 x 32 - 32	4	-	DTC	16M	-	Yes	-	-	-	10-bit x 16	-	-	12 (TPU)	1	2	-	-	-	4 (RSPi)	2	-	-	17	61	-	17(NMI + 16(8 level))	Yes	Yes	64MHz/4.5 to 5.5V	-40 to 85	PLQP0100KB-A
		H8SX/1720S	R5F61725SJ80FPU	256K	24K	F	Yes (Hardware Protect, Software Protect, Error Protect)	H8SX core	87	12.5 (@80MHz)	32 x 32 - 32	4	-	DTC	16M	-	Yes	-	-	-	10-bit x 16	-	-	12 (TPU)	8	2	-	-	-	4 (RSPi)	2	-	-	17	61	-	16(NMI + 15(8 level))	Yes	Yes	80MHz/4.5 to 5.5V	-40 to 85	PLQP0100KB-A
			R5F61727SJ80FPU	512K	40K	F	Yes (Hardware Protect, Software Protect, Error Protect)	H8SX core	87	12.5 (@80MHz)	32 x 32 - 32	4	-	DTC	16M	-	Yes	-	-	-	10-bit x 16	-	-	12 (TPU)	8	2	-	-	-	4 (RSPi)	2	-	-	17	61	-	16(NMI + 15(8 level))	Yes	Yes	80MHz/4.5 to 5.5V	-40 to 85	PLQP0100KB-A

★ : New product    ★★ : Under development

\*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version



### H8SX/1600 Series

Application	Device			Memory				CPU			DMA			External bus extension		Clock		Power Supply Voltage Detection		ADC		DAC		Timers		Watchdog Timer	Serial Interface		I <sup>2</sup> C-bus	Smart Card/SIM	SSU/Special Serial I/O	CAN Channels	USB Function	IrDA	I/O Ports			External Interrupt Pins	On-Board Debugging Function		Operating Frequency/Supply Voltage	Operating Ambient Temperature (°C)	Package
	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Program Security	CPU	Basic Instructions	Minimum Instruction Execution time (ns)	Multiplier	DMAC (channels)	EXDMAC	DTC/DMACII	Address Space (Bytes)	Bus State Controller	PLL	Subclock	POR (Power-On Reset)	LVD (Low Voltage Detection)	Resolution x Channels	Resolution x Channels	8-bit	16-bit	Clock Sync./Clock Async.		Clock Sync. Only	Input Only (Numbers)							CMOS I/O (Numbers)	N-Channel Open Drain Port (Numbers)	On-Chip Debug		On-Board Flash Program				
USB	H8SX/1658R	H8SX/1658R	R5F61653RD50FPV	384K	40K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 - 32	4	4	DTC	16M	ROM/Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O	Yes	-	-	-	10-bit x 8	8-bit x 2	8 (TMR)	12 (TPU)	1	4	-	2	6	-	-	Yes	Yes	9	75	-	13 (NMI x 1 + INT x 12)	Yes	Yes	50MHz/ 3.0 to 3.6V	-40 to 85	PLQP0120LA-A	
			R5F61653RN50FPV	384K																																					-20 to 75		
			R5F61654RD50FPV	512K																																					-40 to 85		
			R5F61654RN50FPV	512K																																					-20 to 75		
		R5F61658RD50FPV	1024K	56K	-40 to 85																																						
		R5F61658RN50FPV	1024K	56K	-20 to 75																																						
		R5F61653MD50FPV	384K	40K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 - 32	4	4	DTC	16M	ROM/Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O	Yes	-	Yes	Yes	10-bit x 8	8-bit x 2	8 (TMR)	12 (TPU)	1	4	-	2	6	-	-	Yes	Yes	9	75	-	13 (NMI x 1 + INT x 12)	Yes	Yes	50MHz/ 2.95 to 3.6V	-40 to 85	PLQP0120LA-A		
		R5F61653MN50FPV	384K																																					-20 to 75			
	R5F61654MD50FPV	512K	-40 to 85																																								
	R5F61654MN50FPV	512K	-20 to 75																																								
	R5F61658MD50FPV	1024K	56K	-40 to 85																																							
	R5F61658MN50FPV	1024K	56K	-20 to 75																																							
	R5F61663MD50BGV	384K	40K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 - 32	4	4	DTC	16M	ROM/Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O/ DRAM/ SDRAM	Yes	Yes	Yes	Yes	10-bit x 8	8-bit x 2	8 (TMR)	12 (TPU)	1	4	-	2	6	-	-	Yes	Yes	9	92	-	13 (NMI x 1 + INT x 12)	Yes	Yes	50MHz/ 2.95 to 3.6V	-40 to 85	PLBG0176GA-A PLQP0144KA-A PLQP0176GA-A PLQP0144KA-A PLQP0176GA-A PLQP0144KA-A PLQP0176GA-A PLQP0144KA-A			
	R5F61663MN50BGV																																						-20 to 75				
	R5F61664MD50BGV																																						-40 to 85				
	R5F61664MN50BGV																																						-20 to 75				
	R5F61668MD50FPV																																						1024K		56K	-40 to 85	
	R5F61668MN50FPV																																						1024K		56K	-20 to 75	
	R5F61668MD50BGV																																						-40 to 85				
	R5F61668MN50BGV																																						-20 to 75				

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### H8SX/1600 Series

Application	Device			Memory				CPU			DMA			External bus extension		Clock		Power Supply Voltage Detection		ADC	DAC	Timers		Watchdog Timer	Serial Interface		I <sup>2</sup> C-bus	Smart Card/SIM	SSU/Special Serial I/O	CAN Channels	USB Function	IrDA	I/O Ports			External Interrupt Pins	On-Board Debugging Function		Operating Frequency/Supply Voltage	Operating Ambient Temperature (°C)	Package		
	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Program Security	CPU	Basic Instructions	Minimum Instruction Execution time (ns)	Multiplier	DMAC (channels)	EXDMAC	DTC/DMACII	Address Space (Bytes)	Bus State Controller	PLL	Subclock	POR (Power-On Reset)	LVD (Low Voltage Detection)	Resolution x Channels	Resolution x Channels	8-bit		16-bit	Clock Sync./Clock Async.							Clock Sync. Only	Input Only (Numbers)	CMOS I/O (Numbers)		N-Channel Open Drain Port (Numbers)	On-Chip Debug				On-Board Flash Program	
USB	H8SX/1665	H8SX/1665	R5F61662D50FPV	384K	40K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 → 32	4	4	DTC	16M	ROM/ Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O/ SDRAM	Yes	Yes	-	-	10-bit x 8	10-bit x 2	8 (TMR)	12 (TPU)	1	4	-	2	6	-	-	Yes	Yes	9	92	16	13 (NMI x 1 + INT x 12)	Yes	Yes	50MHz/ 3.0 to 3.6V	-40 to 85	PLQP0144KA-A	
			R5F61662D50LGV																																						PTLG0145JB-A		
			R5F61662N50FPV																																						PLQP0144KA-A		
			R5F61662N50LGV																																						PTLG0145JB-A		
			R5F61665D50FPV																																						PLQP0144KA-A		
			R5F61665D50LGV																																						PTLG0145JB-A		
	R5F61665N50FPV	PLQP0144KA-A																																									
	R5F61665N50LGV	PTLG0145JB-A																																									
	H8SX/1655	H8SX/1655	H8SX/1655	R5F61652D50FPV	384K	40K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 → 32	4	4	DTC	16M	ROM/ Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O	Yes	-	-	-	10-bit x 8	10-bit x 2	8 (TMR)	12 (TPU)	1	4	-	2	6	-	-	Yes	Yes	9	75	16	13 (NMI x 1 + INT x 12)	Yes	Yes	50MHz/ 3.0 to 3.6V	-40 to 85	PLQP0120LA-A
				R5F61652N50FPV																																						PTLG0145JB-A	
				R5F61652N50LGV																																						PTLG0145JB-A	
				R5F61655D50FPV																																						PTLG0145JB-A	
	R5F61655D50LGV	PTLG0145JB-A																																									
	H8SX/1665M	H8SX/1665M	H8SX/1665M	R5F61662MD50FPV	384K	40K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 → 32	4	4	DTC	16M	ROM/ Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O/ SDRAM	Yes	Yes	Yes	Yes	10-bit x 8	10-bit x 2	8 (TMR)	12 (TPU)	1	4	-	2	6	-	-	Yes	Yes	9	92	16	13 (NMI x 1 + INT x 12)	Yes	Yes	50MHz/ 2.95 to 3.6V	-40 to 85	PLQP0144KA-A
				R5F61662MD50LGV																																						PTLG0145JB-A	
				R5F61662MN50FPV																																						PLQP0144KA-A	
R5F61662MN50LGV				PTLG0145JB-A																																							
R5F61665MD50FPV				PLQP0144KA-A																																							
R5F61665MD50LGV				PTLG0145JB-A																																							
H8SX/1655M	H8SX/1655M	H8SX/1655M	R5F61652MD50FPV	384K	40K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 → 32	4	4	DTC	16M	ROM/ Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O	Yes	-	Yes	Yes	10-bit x 8	10-bit x 2	8 (TMR)	12 (TPU)	1	4	-	2	6	-	-	Yes	Yes	9	75	16	13 (NMI x 1 + INT x 12)	Yes	Yes	50MHz/ 2.95 to 3.6V	-40 to 85	PLQP0120LA-A	
			R5F61652MD50LGV																																						PTLG0145JB-A		
			R5F61652MN50FPV																																						PTLG0120LA-A		
			R5F61652MN50LGV																																						PTLG0145JB-A		
			R5F61655MD50FPV																																						PLQP0120LA-A		
			R5F61655MD50LGV																																						PTLG0145JB-A		

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### H8SX/1600 Series

Application	Device			Memory				CPU			DMA			External bus extension		Clock		Power Supply Voltage Detection		ADC	DAC	Timers		Watchdog Timer	Serial Interface		Smart Card/SIM	SSU/Special Serial I/O	CAN Channels	USB Function	IrDA	I/O Ports			External Interrupt Pins	On-Board Debugging Function		Operating Frequency/Supply Voltage	Operating Ambient Temperature (°C)	Package			
	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Program Security	CPU	Basic Instructions	Minimum Instruction Execution time (ns)	Multiplier	DMAC (channels)	EXDMAC	DTC/DMACII	Address Space (Bytes)	Bus State Controller	PLL	Subclock	POR (Power-On Reset)	LVD (Low Voltage Detection)	Resolution x Channels	Resolution x Channels	8-bit		16-bit	Clock Sync./Clock Async.						Clock Sync. Only	Input Only (Numbers)	CMOS I/O (Numbers)		N-Channel Open Drain Port (Numbers)	On-Chip Debug				On-Board Flash Program		
General-purpose	H8SX/1648A		R5F61642AD50FPV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 → 32	4	-	DTC	16M	ROM/Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O	Yes	-	-	-	10-bit x 12	8-bit x 2	8 (TMR)	12 (TPU)	1	7	-	4	7	-	-	-	Yes	13	97	20	17 (NMI x 1 + INT x 16)	Yes	Yes	50MHz/ 3.0 to 3.6V	-40 to 85	PLQP0144KA-A	
			R5F61642AN50FPV	512K	40K																																				-20 to 75		
			R5F61644AD50FPV	1024K	56K																																				-40 to 85		
			R5F61644AN50FPV																																						-20 to 75		
			R5F61648AD50FPV																																						-40 to 85		
	H8SX/1638B			R5F61632D50FPV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 → 32	4	-	DTC	16M	ROM/Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O	Yes	-	-	-	10-bit x 8	8-bit x 2	8 (TMR)	12 (TPU)	1	7	-	2	7	-	-	-	Yes	9	81	-	17 (NMI x 1 + INT x 16)	Yes	Yes	50MHz/ 3.0 to 3.6V	-40 to 85	PLQP0120LA-A
				R5F61632N50FPV	512K	40K																																				-20 to 75	
				R5F61634D50FPV	1024K	56K																																				-40 to 85	
				R5F61634N50FPV																																						-20 to 75	
				R5F61638D50FPV																																						-40 to 85	
	H8SX/1648L			R5F61642LD50FPV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 → 32	4	-	DTC	16M	ROM/Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O	Yes	-	Yes	Yes	10-bit x 12	8-bit x 2	8 (TMR)	12 (TPU)	1	7	-	4	7	-	-	-	Yes	13	97	20	17 (NMI x 1 + INT x 16)	Yes	Yes	50MHz/ 2.95 to 3.6V	-40 to 85	PLQP0144KA-A
				R5F61642LN50FPV	512K	40K																																				-20 to 75	
				R5F61644LD50FPV	1024K	56K																																				-40 to 85	
				R5F61644LN50FPV																																						-20 to 75	
				R5F61648LD50FPV																																						-40 to 85	
	H8SX/1638L			R5F61632LD50FPV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 → 32	4	-	DTC	16M	ROM/Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O	Yes	-	Yes	Yes	10-bit x 8	8-bit x 2	8 (TMR)	12 (TPU)	1	7	-	2	7	-	-	-	Yes	9	81	-	17 (NMI x 1 + INT x 16)	Yes	Yes	50MHz/ 2.95 to 3.6V	-40 to 85	PLQP0120LA-A
				R5F61632LN50FPV	512K	40K																																				-20 to 75	
				R5F61634LD50FPV	1024K	56K																																				-40 to 85	
				R5F61634LN50FPV																																						-20 to 75	
				R5F61638LD50FPV																																						-40 to 85	
	H8SX/1648G			R5F61642GD50BQGV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 → 32	4	4	DTC	16M	ROM/Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O/ DRAM/ SDRAM	Yes	Yes	-	-	10-bit x 12	8-bit x 2	8 (TMR)	12 (TPU)	1	7	-	4	7	-	-	-	Yes	13	102	20	17 (NMI x 1 + INT x 16)	Yes	Yes	50MHz/ 3.0 to 3.6V	-40 to 85	PLBG0176GA-A
				R5F61642GN50BQGV	512K	40K																																				-20 to 75	
				R5F61644GD50BQGV	1024K	56K																																				-40 to 85	
				R5F61644GN50BQGV																																						-20 to 75	
R5F61648GD50BQGV						-40 to 85																																					
H8SX/1648H			R5F61642HD50BQGV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 → 32	4	4	DTC	16M	ROM/Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O/ DRAM/ SDRAM	Yes	Yes	Yes	Yes	10-bit x 12	8-bit x 2	8 (TMR)	12 (TPU)	1	7	-	4	7	-	-	-	Yes	13	102	20	17 (NMI x 1 + INT x 16)	Yes	Yes	50MHz/ 2.95 to 3.6V	-40 to 85	PLBG0176GA-A	
			R5F61642HN50BQGV	512K	40K																																				-20 to 75		
			R5F61644HD50BQGV	1024K	56K																																				-40 to 85		
			R5F61644HN50BQGV																																						-20 to 75		
			R5F61648HD50BQGV																																						-40 to 85		

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 \*F: Flash memory version, L: ROM-less version, M: Mask ROM version, O: One-time PROM version, Qz: QzROM version

### H8SX/1600 Series

Application	Device			Memory				CPU			DMA			External bus extension		Clock		Power Supply Voltage Detection		ADC	DAC	Timers		Watchdog Timer	Serial Interface		I <sup>2</sup> C-bus	Smart Card/SIM	SSU/Special Serial I/O	CAN Channels	USB Function	IrDA	I/O Ports			External Interrupt Pins	On-Board Debugging Function		Operating Frequency/Supply Voltage	Operating Ambient Temperature (°C)	Package		
	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Program Security	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	Multiplier	DMAC (channels)	EXDMAC	DTC/DMACII	Address Space (Bytes)	Bus State Controller	PLL	Subclock	POR (Power-On Reset)	LVD (Low Voltage Detection)	Resolution x Channels	Resolution x Channels	8-bit		16-bit	Clock Sync./Clock Async.							Clock Sync. Only	Input Only (Numbers)	CMOS I/O (Numbers)		N-Channel Open Drain Port (Numbers)	On-Chip Debug				On-Board Flash Program	
General-purpose	H8SX/1645	H8SX/1645	R5F61641D50FPV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 - 32	4	-	DTC	16M	ROM/Burst ROM/SRAM/Byte control SRAM/Address/Data Multiplexed I/O	Yes	-	-	-	10-bit x 12	10-bit x 2	8 (TMR)	12 (TPU)	1	7	-	4	7	-	-	-	Yes	13	97	20	17 (NMI x 1 + INT x 16)	Yes	Yes	50MHz/3.0 to 3.6V	-40 to 85	PLOP0144KA-A	
			R5F61641D50LGV																																						PTLG0145JB-A		
			R5F61641N50FPV																																						PLOP0144KA-A		
			R5F61641N50LGV																																						PTLG0145JB-A		
			R5F61643D50FPV																																						PLOP0144KA-A		
			R5F61643D50LGV																																						PTLG0145JB-A		
		R5F61643N50FPV	PLOP0144KA-A																																								
		R5F61643N50LGV	PTLG0145JB-A																																								
		R5F61645D50FPV	PLOP0144KA-A																																								
		R5F61645D50LGV	PTLG0145JB-A																																								
		R5F61645N50FPV	PLOP0144KA-A																																								
		R5F61645N50LGV	PTLG0145JB-A																																								
	H8SX/1600	H8SX/1635	H8SX/1635	R5F61631D50FPV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 - 32	4	-	DTC	16M	ROM/Burst ROM/SRAM/Byte control SRAM/Address/Data Multiplexed I/O	Yes	-	-	-	10-bit x 8	10-bit x 2	8 (TMR)	12 (TPU)	1	7	-	2	7	-	-	-	Yes	9	81	16	17 (NMI x 1 + INT x 16)	Yes	Yes	50MHz/3.0 to 3.6V	-40 to 85	PLOP0120LA-A
				R5F61631N50FPV																																						PTLG0145JB-A	
				R5F61633D50FPV																																						PLOP0144KA-A	
				R5F61633D50LGV																																						PTLG0145JB-A	
				R5F61635D50FPV																																						PLOP0144KA-A	
				R5F61635N50FPV																																						PTLG0145JB-A	
	H8SX/1645L	H8SX/1645L	H8SX/1645L	R5F61641LD50FPV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 - 32	4	-	DTC	16M	ROM/Burst ROM/SRAM/Byte control SRAM/Address/Data Multiplexed I/O	Yes	-	Yes	Yes	10-bit x 12	10-bit x 2	8 (TMR)	12 (TPU)	1	7	-	4	7	-	-	-	Yes	13	97	20	17 (NMI x 1 + INT x 16)	Yes	Yes	50MHz/2.95 to 3.6V	-40 to 85	PLOP0144KA-A
				R5F61641LD50LGV																																						PTLG0145JB-A	
				R5F61641LN50FPV																																						PLOP0144KA-A	
				R5F61641LN50LGV																																						PTLG0145JB-A	
				R5F61643LD50FPV																																						PLOP0144KA-A	
				R5F61643LD50LGV																																						PTLG0145JB-A	
R5F61643LN50FPV		PLOP0144KA-A																																									
R5F61643LN50LGV		PTLG0145JB-A																																									
R5F61645LD50FPV		PLOP0144KA-A																																									
R5F61645LD50LGV		PTLG0145JB-A																																									
R5F61645LN50FPV		PLOP0144KA-A																																									
R5F61645LN50LGV		PTLG0145JB-A																																									

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### H8SX/1600 Series

Application	Device			Memory				CPU			DMA			External bus extension		Clock		Power Supply Voltage Detection		ADC		DAC		Timers		Watchdog Timer	Serial Interface		I <sup>2</sup> C-bus	Smart Card/SIM	SSU/Special Serial I/O	CAN Channels	USB Function	IrDA	I/O Ports			External Interrupt Pins	On-Board Debugging Function		Operating Frequency/Supply Voltage	Operating Ambient Temperature (°C)	Package
	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Program Security	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	Multiplier	DMAC (channels)	EXDMAC	DTC/DMACII	Address Space (Bytes)	Bus State Controller	PLL	Subclock	POR (Power-On Reset)	LVD (Low Voltage Detection)	Resolution x Channels	Resolution x Channels	8-bit	16-bit	Clock Sync./Clock Async.		Clock Sync. Only	Input Only (Numbers)							CMOS I/O (Numbers)	N-Channel Open Drain Port (Numbers)	On-Chip Debug		On-Board Flash Program				
General-purpose	H8SX/1600	H8SX/1622	R5F61622D50FPV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 - 32	2	-	DTC	16M	ROM/ Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O	Yes	-	-	-	16-bitΔΣ x 6 10-bit x 8	8-bit x 2	8 (TMR)	6 (TPU)	1	5	-	2	5	-	-	-	-	17	74	-	13 (NMI x 1 + INT x 12)	Yes	Yes	50MHz/ 3.0 to 3.6V	-40 to 85	PLQP0144KA-A	
			R5F61622D50LGV																																							PTLG0145JB-A	
			R5F61622N50FPV																																							PLQP0144KA-A	
			R5F61622N50LGV																																							PTLG0145JB-A	
	H8SX/1635L	H8SX/1635L	R5F61631LD50FPV	256K	24K	F	Yes	H8SX core	87	20 (@50MHz)	16 x 16 - 32	4	-	DTC	16M	ROM/ Burst ROM/ SRAM/ Byte control SRAM/ Address/ Data Multiplexed I/O	Yes	-	Yes	Yes	10-bit x 8	10-bit x 2	8 (TMR)	12 (TPU)	1	7	-	2	7	-	-	Yes	9	81	16	17 (NMI x 1 + INT x 16)	Yes	Yes	50MHz/ 2.95 to 3.6V	-40 to 85	PLQP0120LA-A		
			R5F61631LN50FPV																																					-20 to 75			
			R5F61633LD50FPV	384K	32K																																			-40 to 85			
			R5F61633LN50FPV																																					-20 to 75			
			R5F61635LD50FPV	512K	40K																																			-40 to 85			
			R5F61635LN50FPV																																					-20 to 75			

★ : New product ★★ : Under development

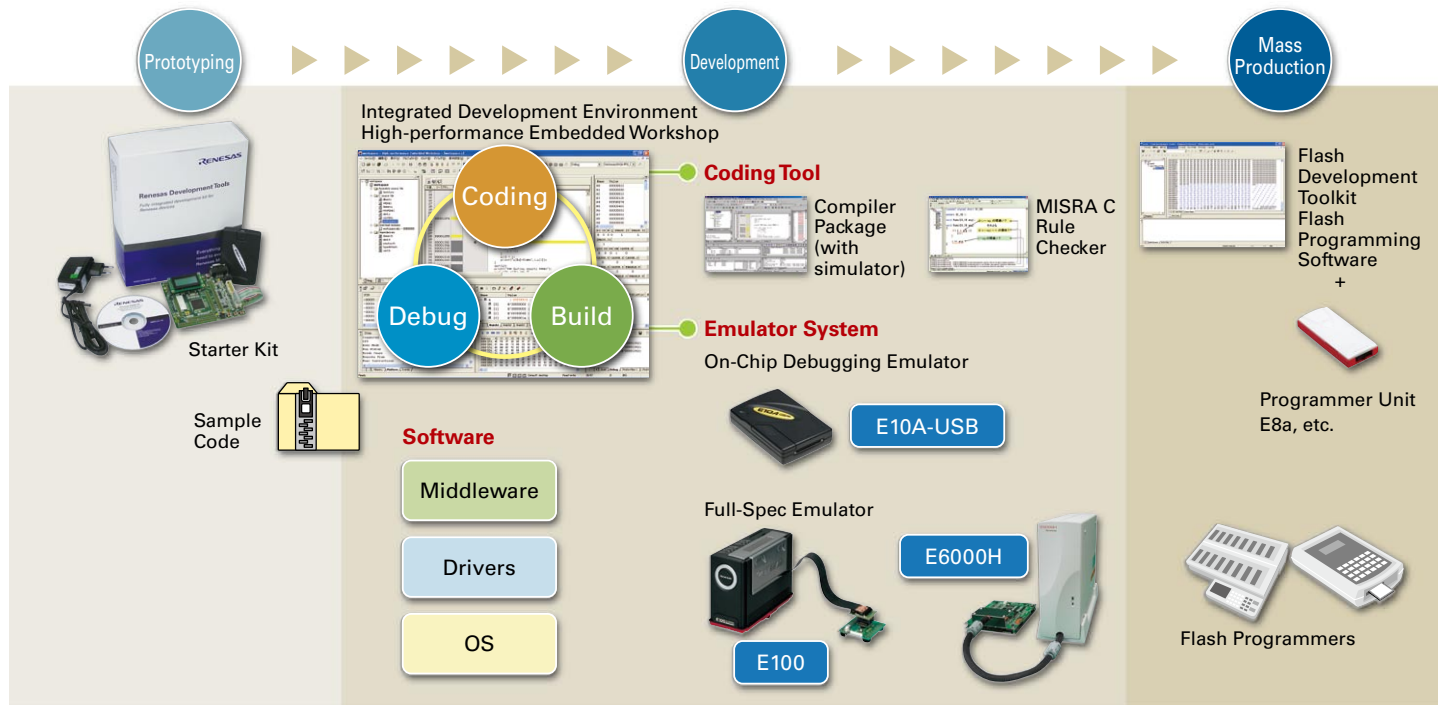
\*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version



### H8SX/1500 Series

Application	Device			Memory				CPU			DMA			External bus extension		Clock		Power Supply Voltage Detection		ADC	DAC	Timers		Watchdog Timer	Serial Interface		I <sup>2</sup> C-bus	Smart Card/SIM	SSU/Special Serial I/O	CAN Channels	USB Function	IrDA	I/O Ports			External Interrupt Pins	On-Board Debugging Function		Operating Frequency/Supply Voltage	Operating Ambient Temperature (°C)	Package			
	Series	Group	Part No.	ROM (bytes)	RAM (bytes)	ROM Type*	Program Security	CPU	Basic Instructions	Minimum Instruction Execution Time (ns)	Multiplier	DMAC (channels)	EXDMAC	DTC/DMACII	Address Space (Bytes)	Bus State Controller	PLL	Subclock	POR (Power-On Reset)	LVD (Low Voltage Detection)	Resolution x Channels	Resolution x Channels	8-bit		16-bit	Clock Sync./Clock Async.							Clock Sync. Only	Input Only (Numbers)	CMOS I/O (Numbers)		N-Channel Open Drain Port (Numbers)	On-Chip Debug				On-Board Flash Program		
General-purpose	H8SX/1500	H8SX/1580	R5F61582N48FPV	256K	12K	F	Yes	H8SX core	87	21 (@48MHz)	16 x 16 → 32	4	-	-	16M	-	Yes	-	-	-	10-bit x 16	-	-	12 (TPU)	1	2	-	-	2	3	-	-	-	17	82	-	17 (NMI x 1 + INT x 16)	Yes	Yes	48MHz/4.5 to 5.5V	-20 to 75	PLQP0120LA-A		
		H8SX/1520R	R5F61527R48FPV	256K	12K	F	Yes (Hardware Protect, Software Protect, Error Protect)	H8SX core	87	21 (@48MHz)	16 x 16 → 32	4	-	-	16M	-	Yes	-	-	-	10-bit x 16	-	-	12 (TPU)	1	2	-	-	2	3	1	-	-	17	65	15	16 (NMI + 15(8 level))	Yes	Yes	48MHz/4.5 to 5.5V	-40 to 85	PRQP0100KB-A		
Automotive	H8SX/1544	R5F61543J40FPV R5F61543L40FPV R5F61544J40FPV R5F61544L40FPV	384K	16K	F	Yes	H8SX core	87	25 (@40MHz)	16 x 16 → 32	4	-	-	16M	ROM/SRAM	Yes	Yes (128 division)	-	-	10-bit x 16	8-bit x 2	-	6 (TPU)	1	4	-	2	3	2	2	-	-	17	95	24	17 (NMI + 16(8 level))	Yes	Yes	40MHz/4.5 to 5.5V	-40 to 85	-40 to 105	-40 to 85	-40 to 105	PLQP0144KA-A
			512K	24K																																				-40 to 85				
			-	-																																				-	-			

★ : New product   ★★ : Under development  
 \*F : Flash memory version, L : ROM-less version, M : Mask ROM version, O : One-time PROM version, Qz : QzROM version



\*A free evaluation version of the coding tool and flash programming software (Flash DevelopmentToolkit) is provided.

■ H8SX Family Development Tool Lineup

MCU	Real Time OS	Software Tool	Emulator		Programming Tool
			On-Chip Debugging Emulator	Full-Spec Emulator	Programmer*2
H8SX/1700 Series	HI1000/4	C/C++ Compiler Package for H8SX, H8S, H8 Family (An integrated development environment*1, compiler and simulator are included. The emulator-debugger is bundled with the emulator.)	E10A-USB	E100	E8a*3, HS0008EASF5H*3
H8SX/1600 Series				E6000H	
H8SX/1500 Series					

\*1. The High-performance Embedded Workshop is provided as an integrated development environment.

\*2. This programmer is for Renesas Flash on-board microcontrollers.

\*3. The E8a and HS0008EASF5H are usable with the Flash DevelopmentToolkit [R0C00000FDW04R] (Free evaluation version available).

\*For information about microcontrollers compatible with the emulator or emulator specifications, access the website: [http://www.renesas.com/emulation\\_debugging](http://www.renesas.com/emulation_debugging)  
Compatible emulators may vary according to the microcontroller part number.

## H8SX Tool

### Get up and running quickly: Starter kit

Want to start evaluating the H8SX right away? The Renesas Starter Kit is just what you need. It brings together in a single package all the development tools needed for microcontroller evaluation and initial implementation. The control signals from the microcontroller are output to the expansion board interface of the CPU board, allowing connection to the target system under development for easy debugging.

Including:

- H8SX On-board CPU Board
- On-Chip Debugging Emulator E10A-USB for Starter Kit
- Multi region power supply
- Free evaluation version of the C/C++ Compiler Package (with simulator)
- Free evaluation version of the Flash Development Toolkit
- The High-performance Embedded Workshop is provided as an integrated development environment.



### Renesas Starter Kit for H8SX Family

Target Device		Product Name	Part Number
Series	Group		
H8SX/1600	H8SX/1622	Renesas Starter Kit for H8SX/1622F	R0K561622S000BE
	H8SX/1648	Renesas Starter Kit for H8SX/1648F	R0K561648S000BE
	H8SX/1663	Renesas Starter Kit for H8SX/1664F	R0K561664S001BE
	H8SX/1668R, H8SX/1668M	Renesas Starter Kit for H8SX/1668	R0K561668S000BE

Visit this website for information about development environment products.

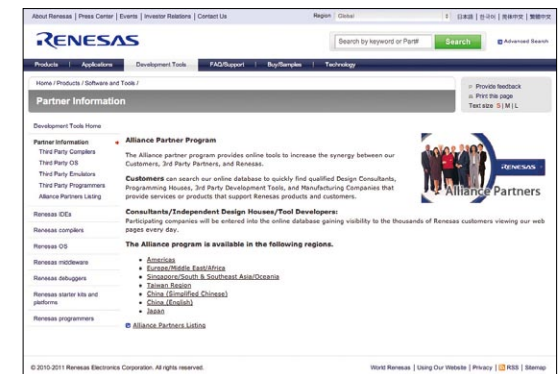
## H8SX Family Development Environment Site

[http://www.renesas.com/h8sx\\_tools](http://www.renesas.com/h8sx_tools)

### Partner Alliances

The Alliance Partner Program is a web system that provides Renesas microcontroller users with the latest information about a wide variety of solutions using partner company products and services in coordination with Renesas products.

Over 700 partner companies worldwide provide development tool products and a variety of services for Renesas microcontrollers needed by Renesas customers for product development. Renesas will continue strengthening and expanding its coordination with partner companies in the future and prepare the optimal solutions for our customers.



Strong alliances with over 700 partner companies worldwide

Click the following URL to access information about partner products and services.  
<http://www.renesas.com/partners>

# Renesas Microcomputer H8SX Family Selection Guide

## Renesas Electronics Corporation

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